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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/645,738	08/21/2003	Blaine D. Gaither	200205296-1	9157

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EXAMINER

ELLIS, KEVIN L

ART UNIT PAPER NUMBER

2188

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/645,738	Applicant(s) GAITHER, BLAINE D.	
	Examiner Kevin L. Ellis	Art Unit 2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

Detailed Action

1. Claims 1-20 are presented for examination.

Claim Rejections – 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1, 8, and 15 are rejected under 35 U.S.C. § 102(b) as being anticipated by Chuang et al., U.S. Patent 4,905,188.

A) As to claims 1, 7, 8, 14, 15, and 20, Chuang et al. discloses the invention as claimed.

There is a cache memory which is on-chip with the processor (see Abstract and Col 24 Lines 67-68), the cache memory stores the data words of a cache line across different memory banks as claimed (see Fig 4 and Col 4 Line 57 to Col 5 Line 56).

B) As to claims 5, 12, and 19, the cache memory does obtain the cache lines from main memory (see Fig 4).

Claim Rejections – 35 USC § 103

4. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 6 and 13 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Chuang et al., U.S. Patent 4,905,188.

A) As to claims 6 and 13, Chuang et al. discloses the invention substantially as claimed.

However, Chuang et al. does not disclose that the cache line is obtained from a lower level cache. It was common knowledge in the art at the time of the invention that computer systems can use multiple levels of cache to increase their performance.

Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention to have utilized the invention of Chuang et al. in a system that also included a lower level cache that would have provided the cache line to the cache for the reasons stated above.

6. Claims 1-20 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Middleton, PG PUB US 2003/0149,841.

A) As to claims 1, 7, 8, 14, 15, and 20, Middleton discloses the invention substantially as claimed. There is a cache memory that stores the data words of a cache line across

different memory banks as claimed (see Abstract, Fig 8a, ¶ 44, 45, 49, 50, 69-71, and 105-108). However, Middleton does not specifically disclose the processor or instruction pipeline. The cache memory of Middleton is designed to be used in a data processing apparatus (see Abstract). Accordingly, it would have been obvious to one having ordinary skill in the art at the time the invention was made that the cache of Middleton can be part of a processor with an instruction pipeline that provides memory access requests to the cache memory.

- B) As to claims 2-4, 9-11, and 16-18, Middleton discloses the invention substantially as claimed. However, Middleton does not state having a plurality of functional units. Modern processor designs at the time of the invention were comprised of a plurality of functional units allowing the processor to execute multiple instructions simultaneously to enhance the overall performance of the system. Accordingly, it would have been obvious to one having ordinary skill in the art at the time of the invention to have the processor have a plurality of functional units for the reasons stated above. With the design of the cache memory of Middleton with different words of a cache line being stored in different banks each functional unit could be accessing a data word in each bank without contention.
- C) As to claims 5, 6, 12, 13, and 19, the cache memory of Middleton would obtain the cache lines from either main memory or from a lower level cache (i.e. secondary cache).

Conclusion

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7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin L. Ellis whose telephone number is 571-272-4205. The examiner can normally be reached on weekdays from 6:00AM-2:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone numbers for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Kevin L. Ellis
Primary Examiner
October 18, 2005

